

Claims

- [c1] A vehicle coupler comprising:
a coupler housing; and
a locking cylinder disposed with said coupler housing
and mechanically coupled to a plurality of engagement
pins;
wherein rotation of said lock cylinder moves said en-
gagement pins between two positions, a first position
wherein said plurality of engagement pins extend be-
yond said coupler housing and a second position
wherein said plurality of engagement pins do not extend
beyond said coupler housing.
- [c2] The vehicle coupler of claim 1 further comprising a lever
that couples said lock cylinder to said plurality of en-
gagement pins.
- [c3] The vehicle coupler of claim 2, wherein said lever com-
prises a slot for receiving a protrusion on a cam coupled
to said lock cylinder.
- [c4] The vehicle coupler of claim 2, wherein said lever com-
prises a plurality of slots each receiving a pin coupled to
one of said plurality of engagement pins.

- [c5] The vehicle coupler of claim 4, wherein each of said lever plurality of slots has two end portions, a first end portion located toward an edge of said lever and a second end portion located toward a center portion of said lever.
- [c6] The vehicle coupler of claim 1 further comprising a blocker positioned between said plurality of engagement pins.
- [c7] The vehicle coupler of claim 1 further comprising a biasing means located between said plurality of engagement pins.
- [c8] The vehicle coupler of claim 1 further comprising a rotatable shaft that couples said lock cylinder to said plurality of engagement pins.
- [c9] The vehicle coupler of claim 8 further comprising a generally circular cam that includes a plurality of slots, each receiving a pin coupled to one of said plurality of engagement pins.
- [c10] The vehicle coupler lock of claim 1, wherein said lock cylinder is located on a side surface of said coupler housing.
- [c11] A vehicle coupler comprising:
a lock cylinder disposed within a coupled to a cam, said

cam including a protrusion;
a lever including a first slot for receiving said protrusion and a second and third slot located on an opposite end of the lever as the first slot;
a pair of pins secured within said second and third slots;
a pair of engagement pins, wherein said pair of pins are secured to said pair of engagement pins;
wherein rotation of said lock cylinder moves said pair of engagement pins between two positions, a first position wherein said plurality of engagement pins extend beyond said coupler housing and a second position wherein said plurality of engagement pins do not extend beyond said coupler housing.

[c12] The vehicle coupler of claim 11 further comprising a blocker positioned between said pair of engagement pins.

[c13] The vehicle coupler of claim 11 further comprising a biasing means located between said pair of engagement pins.

[c14] A vehicle hitch assembly comprising:
a receiver including a pair of apertures; and
a coupler including a pair of engagement pins that are selectively received in said pair of apertures;
wherein said coupler comprises:

a lock cylinder disposed within a coupled to a cam, said cam including a protrusion;
a lever including a first slot for receiving said protrusion and a second and third slot located on an opposite end of the lever as the first slot;
a pair of pins secured within said second and third slots, wherein said pair of pins are secured to said pair of engagement pins;
wherein rotation of said lock cylinder moves said pair of engagement pins between two positions, a first position wherein said plurality of engagement pins extend beyond said coupler housing and a second position wherein said plurality of engagement pins do not extend beyond said coupler housing.

[c15] The vehicle hitch assembly of claim 14 further comprising a blocker positioned between said pair of engagement pins.

[c16] The vehicle hitch assembly of claim 14 further comprising a biasing means located between said pair of engagement pins.

[c17] The vehicle hitch assembly of claim 14 further comprising a ball mount plate and a hitch ball.

[c18] The vehicle hitch assembly of claim 14 further comprising

ing a hitch bar coupled to said vehicle.

[c19] The vehicle hitch assembly of claim 14 further comprising a cargo carrier.

[c20] The vehicle hitch assembly of claim 14 further comprising a bike carrier.